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Upon entry of this Amendment, the following listing of claims replace prior versions and listings of claims in the application.

Please replace the pending claims with the following listing of claims:

Listing of Claims:

1. (Currently Amended) An *in vitro* method for the production of a homologous heart valve, comprising the following steps of:
 - a) ~~provision of~~ providing a biodegradable support (~~scaffold~~),
 - b) ~~colonization of~~ colonizing the support with homologous fibroblasts and/or myofibroblasts cells or a combination thereof to form a connective tissue matrix,
 - c) optionally ~~colonization of~~ colonizing the connective tissue matrix with endothelial cells, and
 - d) ~~fixing of~~ the connective tissue matrix to a non-degradable or poorly degradable frame construction (~~stent~~),wherein, before ~~and~~ or after the fixing ~~to~~ of the frame construction, the connective tissue matrix optionally colonized with endothelial cells is introduced into a pulsatile flow chamber in which it can be exposed to increasing flow rates, and the flow rate is increased continuously or discontinuously.
2. (Currently Amended) An *in vitro* method for the production of a homologous heart valve, comprising the following steps:
 - a) ~~provision of~~ providing a biodegradable support (~~scaffold~~) which is firmly connected to a non-degradable or poorly degradable frame construction (~~stent~~),
 - b) ~~colonization of~~ colonizing the support with homologous fibroblasts and/or myofibroblasts cells or a combination thereof to form a connective tissue matrix,
 - c) optionally ~~colonization of~~ colonizing the connective tissue matrix with endothelial cells,

- d) ~~introduction of~~ introducing the frame construction with the connective tissue matrix connected thereto into a pulsatile flow chamber in which it can be exposed to increasing flow rates, and
 - e) continuously or discontinuously increasing of the flow rate.
- 3. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the biodegradable support ~~is~~ comprises a biodegradable polymer matrix or an acellular biological matrix.
- 4. (Currently Amended) ~~The Method~~ method of ~~according to one of~~ claims 1 ~~to~~ 3, ~~characterized in that wherein~~ the support ~~is~~ comprises a polyglycolic acid (PGA), polylactic acid (PLA), polyhydroxyalkanoate (PHA), poly-4-hydroxybutyrate (P4HB) or a mixture of two or more of these polymers.
- 5. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the support has a polymer density of 40 to 120 mg/cm³, ~~preferably 50 to 80 mg/cm³~~.
- 6. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the support ~~is~~ comprises a porous polymer having a pore size of 80 to 240 µm.
- 7. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the ~~fibres~~ fibers of the support have a diameter of 6 to 20 µm, ~~preferably 10 to 18 µm~~.
- 8. (Currently Amended) ~~The Method~~ method of ~~according to one of~~ claims 1 ~~to~~ 23, ~~characterized in that wherein~~ the support ~~is~~ comprises an acellular connective tissue framework of an animal or human heart valve.

9. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, characterized in that wherein the step of colonization with fibroblasts ~~and/or or~~ myofibroblasts cells or a combination thereof ~~fibroblasts and/or myofibroblasts~~ is repeated 3 to 14 times, ~~preferably 5 to 10 times~~.
10. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, characterized in that wherein approximately: 10^5 to 6×10^8 fibroblasts ~~and/or or~~ myofibroblasts cells or a combination thereof are employed per square ~~centimetre~~ centimeter of support/~~matrix and colonization step~~.
11. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, characterized in that wherein the step of colonization with endothelial cells is repeated 3 to 14 times, ~~preferably 5 to 10 times~~.
12. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, characterized in that wherein approximately: 10^5 to 5×10^8 endothelial cells are employed per square ~~centimetre~~ centimeter of support/~~matrix and colonization step~~.
13. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, characterized in that wherein the cells ~~fibroblasts and/or myofibroblasts and/or endothelial cells~~ are human cells.
14. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, characterized in that wherein the cells ~~fibroblasts and/or myofibroblasts and/or endothelial cells~~ are autologous cells.

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15. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the frame construction comprises ~~is made of~~ a biocompatible ~~non-degradable~~ material.
16. (Cancelled)
17. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the support is fixed to the frame construction by means of conventional suturing, ~~and/or~~ fibrin adhesive, or a combination thereof.
18. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ flow rates of 5 ml/min to 8,000 ml/min, ~~preferably 50 to 2,000 ml,~~ are established in the pulsatile flow chamber.
19. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the flow rate is increased over a period of 1 week to 12 weeks.
20. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the initial flow rate is 50 to 100 ml/min.
21. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the initial pulse frequency is 5 to 10 pulses/min.
22. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the flow rate is increased to 5,000 ml/min.
23. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that wherein~~ the pulse frequency is increased to 180 pulses/min.

24. (Currently Amended) ~~The Method~~ method according to ~~one of~~ claims 1 ~~to~~ or 2, ~~characterized in that~~ wherein systemic pressures of 10 to 240 mm Hg are established in the pulsatile flow chamber.
25. (Currently Amended) An autologous ~~Autologous~~ heart valve, ~~characterized in that~~ it has been produced by ~~a~~ the method according to ~~one of~~ claims 1 ~~to~~ or 2.
26. (Currently Amended) An autologous ~~Autologous~~ heart valve having a connective tissue inner structure surrounded by an endothelial cell layer, wherein the connective tissue inner structure ~~characterized in that~~ it is fixed to a non-degradaable or slowly degradable frame construction ~~(stent)~~.
27. (Currently Amended) The autologous ~~Autologous~~ heart valve according to claim 26, ~~characterized in that~~ wherein a collagen density of 20 to 60 % exists in the connective tissue ~~core~~ inner structure.
28. (Currently Amended) The autologous ~~Autologous~~ heart valve according to claim 27, ~~characterized in that~~ wherein it the heart valve withstands the flow conditions in the human heart.